**Amendment to the Claims:**

1. (Previously Presented) An optical analysis system for determining an amplitude of a principal component of an optical signal, the optical analysis system comprising:

a first multivariate optical element for wavelength selective separation of the optical signal into a first part and a second part,

a second multivariate optical element for wavelength selective weighting of the optical signal on the basis of a spectral weighting function,

a first and a second detector for detecting the weighted first and second parts of the optical signal.

2. (Previously Presented) The optical analysis system according to claim 1, further comprising a dispersive optical element to spectrally disperse the optical signal, the first and the second multivariate optical elements arranged to receive the dispersed optical signal.

3. (Previously Presented) The optical analysis system according to claim 2, wherein the first multivariate optical element comprises a first region for receiving a spectral portion of the dispersed optical signal, the first region modifying the polarization of the dispersed optical signal.

4. (Previously Presented) The optical analysis system according to claim 2, wherein the second multivariate optical element comprises a second region for receiving a spectral portion of the dispersed optical signal, the second region having a transmission or reflectivity relating to the spectral weighting function.

5. (Previously Presented) The optical analysis system according to claim 3, wherein the first region of the multivariate optical element for modifying the polarization of the dispersed optical signal is configurable for generating configurable polarization modifications of the dispersed optical signal.

6. (Previously Presented) The optical analysis system according to claim 4, wherein the transmission and/or reflectivity of the second region of the second multivariate optical element is configurable.

7. (Previously Presented) The optical analysis system according to claim 1, wherein at least one of the first multivariate optical element and the second multivariate optical elements comprises at least one configurable transmissive or reflective liquid crystal cell.

8. (Previously Presented) The optical analysis system according to claim 1, wherein the first multivariate optical element comprises a dichroic element being adapted to spatially separate the first and the second part of the optical signal.

9. (Previously Presented) The optical analysis system according to claim 1, further comprising a polarization conversion element.

10. (Previously Presented) An optical analysis system according to claim 1, further comprising a light source for providing light for illuminating a sample comprising a substance having a concentration and thereby generating the principal component, the amplitude of the principal component relating to the concentration of the substance.

11. (Cancelled)

12. (Previously Presented) A method of determining an amplitude of a principal component of an optical signal, the method comprising the steps of:

separating the optical signal into a first part and into a second part by means of a wavelength selective multivariate optical element,

weighting of the optical signal on the basis of a spectral weighting function by means of a second multivariate optical element,

detecting the weighted first and second parts of the optical signal.

13. (Previously Presented) The optical analysis system according to claim 3, wherein the second multivariate optical element comprises a second region for receiving a spectral portion of the dispersed optical signal, the second region having a transmission or reflectivity relating to the spectral weighting function.

14. (Previously Presented) A blood analysis system comprising:

a first multivariate optical element for wavelength selective separation of an optical signal into a first part and a second part,

a second multivariate optical element for wavelength selective weighting of the optical signal on the basis of a spectral weighting function,

a first and a second detector for detecting the weighted first and second parts of the optical signal.

15. (Previously Presented) The blood analysis system of claim 14 further comprising a light source that is directed towards on sample, wherein the light source striking the sample creates the optical signal.

16. (Previously Presented) The blood analysis system according to claim 14, further comprising a dispersive optical element to spectrally disperse the optical signal; and wherein the first multivariate optical element comprises a first region for receiving a spectral portion of the dispersed optical signal, the first region modifying the polarization of the dispersed optical signal.

17. (Previously Presented) The optical analysis system according to claim 16, wherein the second multivariate optical element comprises a second region for receiving a spectral portion of the dispersed optical signal, the second region having a transmission or reflectivity relating to the spectral weighting function.

18. (New) An optical analysis system for determining an amplitude of a principal component of an optical signal, the optical analysis system comprising:

a dispersive optical element which spectrally disperses the optical signal into a first spectral component and a second spectral component;

a first multivariate optical element which wavelength weights the first spectral component and the second spectral component on the basis of a spectral weighting function;

a second multivariate optical element which switches a polarization state of the weighted first spectral component and the weighted second spectral component of the optical signal; and

a first detector and a second detector which detect the weighted and polarized first and second spectral components of the optical signal.